Reward Crowdfunding Success Forecasting: An Empirical Evaluation of Machine Learning Algorithms

Autoria

Wesley Mendes-da-Silva - mr.mendesdasilva@gmail.com
Mestrado e Doutorado em Administração de Empresas - FGV/EAESP / FGV/EAESP - Fundação Getulio Vargas - Escola de Administração de Empresas de São Paulo

Israel José dos Santos Felipe - israeljfelipe@gmail.com
Programa de Pós-Graduação em Administração – PPGA / UFRN - Universidade Federal do Rio Grande do Norte 64 / NIPE/Universidade do Minho (Portugal)

George Darmiton da Cunha Cavalcanti - gdcc@cin.ufpe.br
Programa de Pós-graduação em Ciência da Computação / UFPE - Universidade Federal de Pernambuco

Leonardo Alves dos Santos - las3@cin.ufpe.br
Programa de Pós-Graduação em Ciência da Computação / UFPE - Universidade Federal de Pernambuco

Agradecimentos

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001

Resumo

Reward-based crowdfunding has been increasingly used by entrepreneurs and small businesses to raise capital for their creative projects, whose success is central to this industry. We offer new empirical evidence from machine learning (ML) models, based on variables related to sentiment on media campaign profile, and geography of the cities where the campaigns are launched. We evaluated fifteen ML models and in particular multiple classifier systems (MCSs), a promising category of algorithms that combine different models. Over 4,000 campaigns hosted on the largest reward crowdfunding platform in one of the ten largest economies in the world are used in the experimental study. Our results show that Meta-DES, which performs dynamic selection, obtains the best overall results among the evaluated models such as artificial neural networks, decision trees, random forest and XGBoost. Furthermore, since usually interpreting the output of ML models is considered to be very difficult due to their complex “black box” architecture, we also use Shapley additive explanations to interpret the outputs of forecasting. Among variables evaluated in our models, including the textual sentiment of the mass media, the number of pledges and the target amount of the campaign deserve to be highlighted when predicting the campaign's success.